

Amendments to the Specification:

Please replace the paragraph beginning on page 13, line 3 with the following amended paragraph:

For $Ds[0]$, $Ds[1]$, ..., $Ds[N-1]$, the V coder 212 conducts a code-V coding (nV , kV) for each column and the H coder 213 conducts a code-H coding (nH , kH) for each row. Redundant data resultant from the coding operations is sent to the data allocator 211. Specifically, for $Ds[i]$ (kV bytes \times kH bytes) and for all i of $0 \leq i \leq N-1$, the V-coder 212 conducts coding in a column direction to generate redundant data $Vs[i]$ (rV bytes \times kH bytes) the H-coder 213 conducts coding in a row direction to generate redundant data $Hs[i]$ (kV bytes \times rH bytes). The H-coder 213 conducts coding in a row direction for $Vs[i]$ (rV bytes \times kH bytes) or the V-coder 212 conducts coding in a column direction for $Hs[i]$ (kV bytes \times rH bytes) to generate redundant data $Xs[i]$ (rV bytes \times rH bytes). Having received the redundant data, the data allocator 211 allocates the redundant data in the memory 214 to resultantly obtain N product-code codewords 101, 102, ..., 103, each codewords in the form of nV bytes \times nH bytes. Thereafter, from the N product-code codewords in the memory 214, the data allocator 211 outputs, as an ECC block, each row of each product-code codeword ~~in an alternating fashion~~ for each of the N product-code codewords to the signal modulator 222.

Please replace the paragraph beginning on page 14, line 23 with the following amended paragraph:

Subsequently, each column of the N (kV bytes \times kH bytes) two-dimensional array, the V coder 212 conducts coding according to (nV , kV) code V and the H coder 213 conducts coding according to the (nH , kH) code H. Redundant data obtained as a result of the coding operations above is sent to the data allocator 211. Having received the redundant data, the data allocator 211 allocates the redundant data in the memory 214 to resultantly obtain N product-code codewords 401, 402, ..., 403 each of which is in the form of nV bytes \times nH bytes. Thereafter, from the N product-code codewords in the memory 214, the data allocator 211 outputs, as an ECC block, each row of each product-code codeword ~~in an alternating fashion~~ for each of the N product-code codewords to the signal modulator 222.

Please replace the paragraph beginning on page 21, line 22 with the following amended paragraph:

That is, the data allocator 211 subdivides a (kV bytes \times nH bytes) two-dimensional array including a two-dimensional array of $Ds[i]$ and $Hs[i]$ into $N \times M$ (md bytes \times nH bytes) two dimensional arrays; a two-dimensional array of $Ds'[i][0]$ and $Hs'[i][0]$, a two-dimensional array of $Ds'[i][1]$ and $Hs'[i][1]$, ..., and a two-dimensional array of $Ds'[i][N \times M - 1]$ and $Hs'[i][N \times M - 1]$. Moreover, the data allocator 211 subdivides the (rV bytes \times nH bytes) two-dimensional array including a two-dimensional array of $Vs[i]$ and $Xs[i]$ into M (mr bytes \times nH bytes) two dimensional arrays; a two-dimensional array of $Vs'[i][0]$ and $Xs'[i][0]$, a two-dimensional array of $Vs'[i][1]$ and $Xs'[i][1]$, ..., and a two-dimensional array of $Vs'[i][M - 1]$ and $Xs'[i][M - 1]$. The data allocator 211 then rearranges these arrays in the memory 214 for each j of $0 \leq j \leq M - 1$ such that the (mr bytes \times nH bytes) two-dimensional array including a two-dimensional array of $Vs'[i][j]$ and $Xs'[i][j]$ is just inserted between two (md bytes \times nH bytes) two dimensional arrays; a two-dimensional array of $Ds'[i][N \times j + i]$ and $Hs'[i][N \times j + i]$ and a two-dimensional array of $Ds'[i][N \times j + i + 1]$ and $Hs'[i][N \times j + i + 1]$. Resultantly, there are obtained the rearranged N (nV bytes \times nH bytes) product-code codewords. Thereafter, from the N product-code codewords thus rearranged in the memory 214, the data allocator 211 outputs, as an ECC block, each row of each product-code codeword ~~in an alternating fashion~~ for each of the N product-code codewords to the signal modulator 222.